2.0 SCOPE OF INVESTIGATION

2.1 Introduction

This section describes the soil, sediment, surface water, and groundwater RI activities performed and previously reported in the 1998, 2004, and 2006 NYSDEC deliverables. Descriptions of the field methods, approved by NYSDEC, were detailed in the August 1995, April 2003, and September 2005 Work Plans. For completeness, a brief summary of the 2007 Subslab Vapor and Indoor Air Quality activities is included. A more detailed report encompassing vapor and air can be found in the February 2007 Soil Vapor Intrusion Work Plan and July 2007 Soil Vapor Investigation Report by AKRF.

2.2 Pit Location Survey

In the 1998 RI/FS, seven each pit/tank were positively identified. Four of the known structures (historically identified by WCHD/NYSDEC as Pits C, D, E, and F on Figure 2-1) are concrete cinderblock construction and were apparently used for leaching solids from the electroplating process water. The fifth structure (Pit G, Figure 2-1) is a concrete tank with internal baffles believed to increase the flow path of water through the tank and promote the settling of solids. This tank is located on the northwest corner of the Magna Metals building and was apparently the first tank in the series of settling tanks/leach pits. The sixth structure (Pit A, Figure 2-1) is a small concrete tank that appears to be a septic system distribution or storage tank, but it may have also served as part of the leaching system. During brush clearing activities, a fifth concrete, cinderblock pit (Pit B, Figure 2-1), similar to pits C, D, E, and F, (Figure 2-1) was located.

However, historical documentation, contained in NYSDEC files and provided to ISCP September 2002 showed that two septic tanks and up to nine drainage structures existed on the Magna Metals site at one time (Appendix A). Commencement of field work occurred July 2003 to search for additional structures beyond those presented in the 1998 RI.

Based on field observations and field interpretation of the pit structures, Pit A and Pit G, were renamed septic tank ST-01, and leach pit LP-01, respectively for the 2004 report. These appear to be the first in the series of settling tanks/leach pits at the site (Figure 2-2). In the 2004 supplemental RI report Pit B was also renamed ST-02, and Pits C, D, E, and F were renamed to LP-02, LP-03, LP-04, and LP-05, respectively.

Operations, to find and excavate additional leach pits beyond those presented in the 1998 RI, were conducted from August through October 2003. A total of 13 leach pits/septic tanks, which includes the 7 previously found structures during the 1998 RI, were identified during of the 2003 excavation activities (see Figure 2-3).

The results of the 2004 Supplemental RI report investigatory excavation work are described herein. Photographs documenting the findings are presented in Appendix B. On August 11th and 25th, 2003, RI field personnel hand excavated targets identified by the geophysics subcontractor. The targets were excavated to depths ranging from 1.5 to 2.5 feet below ground surface (bgs). This effort did not result in the discovery of any additional pits.

After excavation of targets, field personnel began excavations tracing pipes connecting known leach pits. By tracing the pipes, three leach pits (LP-06, LP-07, and LP-08) were discovered (photos 2 – 4 in Appendix B). These three leach pits are of prefabricated concrete construction similar to leach pits LP-0A and LP-09. Prior to performing the geophysical survey, field reconnaissance and brush clearing activities were performed during July and August of 2003. Leach pits (LP-09 and LP-0A on Figure 2-2) are of prefabricated concrete construction with side-walls perforated by approximately 1-inch diameter holes. The pits appear to have gravel bottoms and gravel packing around the tank sides to facilitate the filtration of water away from the pits. One inlet pipe enters and one outlet pipe exits leach pit LP-0A. LP-09 contains only an inlet pipe and therefore appears to be the terminus of the leach pit series.

The pipes traced off of the known leach pits were perforated and of PVC or composite plastic construction. A photograph displaying the type of inter connecting pipes is provided as photo 5 in Appendix B.

Using polyethylene tubing fed through the pipes observed to enter/exit leach pits, field personnel confirmed that leach pits LP-04, LP-06 through LP-09 and LP-0A are directly connected, with no pits believed to be in-between these pits (Figure 2-2). This method was also used to confirm a connection between leach pits LP-02 through LP-05 (Figure 2-2). Several attempts were made to verify a connection between ST-02 and LP-02. Each attempt failed as the tubing appeared to encounter an obstruction approximately 25 feet to the north of ST-02. Based on historic drawings, this obstruction may be another leach pit.

A pipe leading from leach pit LP-05 was excavated on August 26, 2003. The effort was terminated approximately 7 ft north of the leach pit opening at 4 feet bgs, the greatest depth that could be reached by hand digging methods.

On October 9th and 10th, 2003, with the use of a Bobcat Model 325 Mini-excavator, the pipe leading to the north from leach pit LP-05 was further traced and another leach pit (LP-06A) was uncovered (photo 6 in Appendix B). Leach pit LP-06A, is of concrete cinderblock construction, similar to pits LP-02 through LP-05 (Table 2-1), and contains one inlet pipe on the southern wall and one pipe exiting the pit on the northern side. The existing pipe has been blocked and apparently sealed off using a tarred tin coffee can (photo 7 in Appendix B). Utilizing polyethylene tubing, it was determined that leach pit LP-06A is connected to leach pit LP-05. The pipe leading north from of leach pit LP-06A was traced approximately 11 feet north of the leach pit and to a depth of approximately 7.5 feet bgs, the maximum depth able to be reached with the mini-excavator. The pipe appeared to continue to the north, but could not be followed further due to the pipe depth.

The mini-excavator was also used to excavate the remaining targets identified by geophysics. Five targets that appeared to be inline with the pipe leading north from leach pit LP-06A were excavated to depths ranging from approximately 2.8 to 4 feet bgs. The excavation of these targets did not result in discovery or any additional pits.

Ten of the 13 leach pits were observed to contain sludge cake. The sludge cake in pits ST-02, LP-02, LP-03 and LP-05, which had been left open to the elements, after historic operations ceased, was moist. Sludge cake in pits LP-06A, LP-07, LP-08, LP-09 and LP-0A, which had been covered until discovery during the Supplemental RI field work, were desiccated. The desiccated sludge cake in LP-06 is shown in photo 7 of Appendix B. Table 2-1 identifies the approximate thickness of sludge cake observed in each leach pit/septic tank.

2.2.1 Geophysical Survey

Two geophysical surveys were performed in order to verify the number of pits/tanks on site and the sampling of those pits; November 20 and 21, 1996 and August 5 and 11, 2003.

During the 1996 survey, ground penetrating radar (GPR) data were collected along 34 mutually orthogonal lines. Lines parallel to the former Magna Metals building (roughly east-west) were spaced 10 feet apart. Multiple GPR lines were collected over locations of known subsurface pits to identify the characteristic GPR signature of these features. The GPR data indicated seven subsurface structures.

A second survey was performed on August 4th and 11th, 2003. Based on the historical documents, provided to ISP by NYSDEC in 2003, an area north of the known pits, approximately 30 feet by 165 feet in size, was identified for study. On March 29th and 30th, 2004, the area surveyed was presented and on Figure 2-2.

Two geophysical methods; electromagnetic terrain conductivity (EM) and ground penetrating radar (GPR) were used to conduct the 2003 survey. EM data was collected at approximately two-foot intervals along parallel lines spaced approximately 2.5 feet apart. GPR data was also collected along parallel lines spaced no greater than 2.5 feet apart to aid in the identification of subsurface anomalies.

Based on the results of the 2003 geophysical survey, six relatively large, flat-topped subsurface anomalies were detected. The size and shape of these targets were determined to be consistent with potential leach/septic pits. Additionally, some smaller flat reflectors that could represent smaller leach/septic pits and general areas of buried metal and apparent conductive anomalies were detected (see Appendix C, Figure 5).

Based on the results of the geophysical survey, locations of potential leach/septic structures were marked in the field with flags. A photograph of the geophysical area with flagged targets is provided as photo 1 in Appendix B of this report.

A complete record of the two geophysical reports are provided in Appendix C.

2.3 Holding Tank/Septic Tank/Leaching Pit/Refuse Area Sampling

One septic tank, Pit A, and one leach pit, Pit G, were sampled on May 14 and 22, 1997. Please note that these structures were later renamed as ST-01 and LP-01 respectively in the 2004 report as further field information was obtained. Standing water from both pits were collected, and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), TCL pesticides and polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals, and cyanide. In addition, a sludge sample was collected from Pit A; no sample could be collected from Pit G due to an absence of sludge. The Pit A sludge sample was analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, cyanide and total organic carbon (TOC).

A light track rig was used for drilling soil borings adjacent (approximately two feet away) to the septic tanks/leach pits. The seven soil borings were advanced on December 10 and 11, 1996 using hollow-stem auger and continuous 2-inch split-spoon drilling methods. The targeted sampling depth was the interval extending from the elevation of the bottom of the structure to two feet below the bottom of the structure.). Soil samples were collected from the interval equivalent to the bottom of the tank/pit. The samples were field screened visually, and with an organic vapor analyzer (OVA) and a combustible gas indicator (CGI). A total of seven samples and one duplicate were collected, and the soil samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, and cyanide. Soils were classified according to Burmeister Soil Classification System. Organic vapors in the soil were monitored with a Foxboro OVA 128. Logs for the soil borings, including soil descriptions, field instrumentation readings, observations, and analytical sampling intervals, are provided in Appendix D.

Sampling of the leach pits/septic tanks took place on July 30th, August 26th, September 5th and October 10th, 2003. Eleven pits were sampled: LP-02, LP-03, LP-05, LP-06, LP-06A, LP-07, LP-08, LP-09, LP-0A, ST-01 and ST-02. Samples were collected using decontaminated stainless-steel hand-augers, bowls, and spoons.

When possible, two samples were collected from each pit, one of the sludge-cake materials and a second of the soil immediately below the sludge-cake. The sludge-cake materials contained fine laminations of a variety of colors including greens, grays, maroons, pinks, browns, yellows and blues (photo 8 in Appendix B). The southern septic tank ST-01 had an apparent concrete bottom, and therefore only a sludge sample was collected from this pit. Pits LP-0A and LP-09 contained only trace amounts of sludge above the soil. As such, only one sample was collected from each of these pits. The samples collected from leach pits LP-0A and LP-09 were a combination of soil and the overlying sludge cake.

A total of 19 samples and two duplicate samples were collected and analyzed for TCL, VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, cyanide and TOC. Sludge materials, when present, were described and soils were classified according to the Unified Soil Classification System (USCS).

No sample was collected from LP-01 as the pit has and apparent concrete/solid bottom with no sludge present. Leach pit LP-04 could not be sampled as this pit has been filled with asphalt pieces, glass bottles and other debris.

One sample was collected from 2.5 to 3.0 feet bgs in the apparent refuse area located north of the former Magna Metals building (soil boring RA on Figure 2-2). A decontaminated stainless steel hand auger, bowl and spoon were used to collect the sample. The sample was analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, cyanide and TOC.

2.4 Surface Water and Sediment Sampling

A total of 12 surface water samples (and one duplicate) were collected by grab at the Magna Metals site on May 12, 14 and 22, 1997. Locations were as follows: four surface water samples from the tributary, one sample after the confluence of the stream and tributary; one sample from the confluence of the stream and pond; two samples from the pond; one sample at the drainage culvert from the pond along Cross Roads Avenue; two samples in the wetlands area; and one upgradient sample from the stream. Surface water sampling locations are presented on Figure 2-2. Samples were collected prior to sediment samples and by moving in an upstream direction. Field analyses of pH, specific conductance, and temperature were taken at each sampling location with a Hydac water quality meter. The surface water samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs (three locations), TAL metals, cyanide, and hardness.

Twelve surface sediment samples (and one duplicate) were collected at the same locations in 1997; see Figure 2-2. A stainless steel scoop was used to obtain those sediment samples with only standing water less than four inches deep. When the water above the sediments was flowing or was greater than four inches in depth, a corer was used to collect the sediment sample so that washing of the sample was minimized. Sediment samples were collected moving in an upstream direction and after then surface water samples were collected. The sediment samples were field screened visually and with a photoionization (HNu) instrument. Samples for volatile analysis were collected without homogenization. The sediment samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs (three locations), TAL metals, cyanide, and TOC.

Benthic samples were collected from 7 locations on March 29th and 30th, 2004. Sediment for toxicity and supplemental analyses (TAL metals, PAH, TOC and acid volatile sulfide and soluble extractable metals) were collected March 30th through April 3rd, 2004. Surface water samples for TAL metals and toxicity analyses were collected on March 29, 2004.

Sample locations were surveyed using a Trimble Pro XRS GPS. GPS data was collected March 25th through April 3rd, 2004. GPS data is presented on Figure 2-2.

Analyses and reporting of the surface water and sediment data used in the ecological analysis is presented in Section 5 of this report.

2.5 Surface Soil Sampling

Five surface soil samples and one duplicate were collected at the locations displayed on Figure 2-2 on April 11, 1997. An additional surface soil sample was collected from location SS-2 on November 17, 1997. Samples SS-1, SS-2 and SS-3 were collected downgradient of the on-site tanks/pits. Samples SS-4 and SS-5 are upgradient background surface soils. A material classification using the Burmeister Classification system was performed at each sampling location, and the soil descriptions are presented on logs in Appendix D. In addition, the surface soil samples were field screened visually and with a photoionization (HNu) instrument.

A stainless steel soil coring device/silver bullet sampler was used to obtain the surface (i.e., 0 to 12 inches in depth) samples. Volatile samples were collected first without homogenization, from the 6 to 12-inch interval. The April 1997 surface soil samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, and cyanide. The November 1997 surface soil sample was also analyzed for TOC.

On July 29th and 30th, 2003, ten additional surface soil samples were collected from the 0 to 2-inch bgs interval. The samples were collected using a stainless steel spoon and bowl and were analyzed for TCL VOCs, TAL metals and cyanide. The surface soil sample locations were surveyed using a Trimble Pro XRS GPS. GPS data was collected on July 30, 2003 and February 27, 2004 and sample locations are presented on Figure 2-2.

2.6 Subsurface Soil Sampling

Soil borings were drilled in conjunction with the monitoring well installation program at the site on November 17 through 21, 1997, utilizing hollow stem augers. Split spoon sampling was performed continuously from the surface to the bottom of the boring to provide a continuous boring log. These logs are provided in Appendix D and include the following:

- Physical characteristics and grain size distribution of samples (using the Burmeister Soil Classification System);
- Blow counts for driving the sampler (standard penetration resistance);
- Presence of any visible contaminants;
- Color changes;
- Groundwater level;
- Thickness of individual units; and
- Any other conditions encountered during drilling.

A total of seven samples and one duplicate were analyzed for volatile organics, TCL VOCs, TCL SVOCs, TCL pesticides and PCBs (one sample) and TAL metals, cyanide, and total organic carbon. Soil samples were collected continuously at all test borings. Two samples were collected for analysis at each location wherever possible. Sample intervals were from surface (0 to 2'), at the water table interface (approximately 6 to 8 feet below ground surface [bgs]) and at the midpoint of the screened interval (10 to 12 feet bgs).

2.7 Monitoring Well Installation

<u>1998 RI/FS</u>

The RI monitoring well program was designed to provide groundwater sampling points immediately downgradient of the potential source area (leach pits and tanks), and a sampling point upgradient to provide background data for comparative analytical purposes. Downgradient wells were positioned to intercept groundwater flow from the disposal area in the overburden aquifer. Since the site area contains a large topographic low area which consists of wetlands, groundwater flow is anticipated in this direction. Therefore, three monitoring wells, MW-2, MW-3, and MW-4, were installed southwest (downgradient) of the tanks/leach pits to intercept groundwater flow. Monitoring well MW-1 was installed at a location upgradient/sidegradient of the sources. The locations of the monitoring wells are shown in Figure 2-2.

On November 17 through 21, 1997, the monitoring wells were installed in the overburden aquifer to screen the water table. Monitoring well borings were drilled utilizing hollow stem augers. Wells were constructed in the boreholes using two-inch diameter PVC riser and No. 20 slot PVC screens. Well development was conducted until the well responded to water level changes in the formation and produced clear, sediment-free water to the extent possible. The wells were developed with a goal of producing water of not more than 10% variation between successive field parameters.

2004 Supplemental RI

On August 26 through 28, 2003, monitoring wells MW-05, MW-06, and MW-08 (Figure 2-2) were installed in the overburden. Monitoring well MW-05 was installed upgradient of the leach pit area for the collection of background groundwater chemistry samples. Monitoring well MW-06 was installed in the leach pit area to assist in defining the northerly extent of groundwater contamination detected in samples collected from monitoring well MW-04 in May 1998. Monitoring well MW-08 was installed to assist in delineation the horizontal extent of groundwater contamination downgradient of the leach pit area.

Overburden monitoring well borings were drilled with 4 ¼ inner-diameter hollow stem augers (HSA). The boreholes were completed as monitoring wells and screened across the water table using two-inch Schedule 40 PVC riser and 10 slot Schedule 40, slotted PVC screen. Sand packs were constructed with No. 1 silica sand. Boring logs and monitoring well construction diagrams are provided in Appendix D.

Well development was conducted by pumping and surging until the well responded to water level changes in the formation and produced clear, sediment-free water to the extent possible. The wells were developed with a goal of producing water of not more than 10% variation between successive field parameters.

Bedrock monitoring wells MW-04D and MW-07 (Figure 2-2) were installed on August 22 through September 3, 2003. Bedrock monitoring well borings were drilled with 4 ¼ HSA in the overburden and a 5 5/8-inch roller bit in bedrock. MW-04D was installed immediately adjacent to MW-04 to determine if contamination of the overburden aquifer had migrated into the underlying bedrock aquifer. MW-07 was installed approximately 600 feet in the general downgradient direction of MW-04 along Rosalind Drive. MW-07 was initially planned as an overburden well to assist in determining the downgradient edge of the plume; however bedrock was encountered at 2 feet bgs, thus the well was completed as a bedrock well. Boring logs and monitoring wells construction diagrams are provided in Appendix D.

The bedrock monitoring wells were developed following the same procedures as for the overburden monitoring wells. Monitoring well development data sheets for the bedrock wells are provided in Appendix D.

2006 Data Findings Letter Report

A third phase of monitoring well installation and sampling were performed in 2005. The proposed additional activities were requested by NYSDEC to provide a more comprehensive view of volatile organic contamination in the groundwater occurring at the site.

Three additional monitoring wells were installed in the overburden water-bearing zone as specified during the August 31, 2005 NYSDEC/NYSDOH site meeting. The locations of the three additional monitoring wells are shown on Figure 2-2.

Monitoring wells MW-09 and MW-10 were installed west (downgradient) of the Site building to evaluate groundwater quality and to provide a more comprehensive assessment on the source of groundwater contamination. MW-11 was installed on the north side of Leach Pit LP-09 and within the terrace on which the leach pits are situated, to supplement delineation of the volatile organic groundwater contamination. Monitoring well depths and screened intervals were selected based on the elevation of the water table, the screen intervals being placed across the water table.

2.8 Groundwater Contamination Delineation

<u>1998 RI/FS</u>

The 1998 RI/FS groundwater sampling program was designed to provide information (1) for a more precise understanding of overburden groundwater at the site, and (2) on the presence, nature and extent of a contamination plume. One round of sampling was performed on May 11 and 12, 1998, at the four installed monitoring wells (see Figure 2-2). The wells were sampling using NYSDEC approved USEPA Low Flow Sampling Procedures. Specific conductance, pH, and temperature were measured at the start of purging operations and after each purged volume. Stabilization of these parameters of ± 10 percent from successive purged volumes indicated that the groundwater within the well was at equilibrium. Groundwater samples were obtained by using a stainless steel or Teflon bailer suspended on stainless steel Teflon coated wire. Wells were sampled for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals and cyanide.

<u>2004 Supplemental RI</u>

The groundwater sampling program was designed to provide additional information for a more precise understanding of overburden and bedrock water bearing units at the site, and to further define the presence, nature and extent of a contamination plume. One round of sampling was performed on October 6 through 8, 2003. Groundwater samples were collected from seven of the nine site monitoring wells (MW-01, MW-02, MW-04, MW-04D, MW-05, MW-07, and MW-08) The collected samples were analyzed for TCL VOCs, TAL metals and cyanide.

All wells, except MW-04, were sampled using NYSDEC-approved USEPA Low Flow Sampling Procedures. Groundwater samples were collected using a 2-inch stainless steel Grundfos pump with Teflon-lined tubing.

Specific conductance, pH, dissolved oxygen, oxidation-reduction potential, turbidity and temperature were measured at the start of purging operations and periodically (approximately every 3 minutes) during purging. Stabilization of these parameters (pH: ± 0.1; conductivity: ± 3%; dissolved oxygen: ± 10%; oxidation-reduction potential: ± 10 mV; turbidity: >50 NTU or ±10%) over three consecutive readings indicated that the groundwater within the well was at equilibrium. Well purge data sheets are presented in Appendix D.

Due to a low volume of water in MW-04, this well was bailed dry using a 1" diameter Teflon bailer and then allowed to recharge. Once the well had recharged, samples were collected using a Teflon bailer. Due to the small volume of water extracted from the well during purging (approximately 0.25 gallons), water quality measurements were not collected.

No sample could be collected from monitoring wells MW-03 and MW-06. MW-03 was dry and MW-06 was bailed but contained only mud and sediment. As such, no sample was collected. These wells demonstrated the limited water-bearing zone beneath the site area.

2006 Data Findings

Three (3) newly installed monitoring wells (MW-9 through MW-11) and previously installed monitoring wells MW-02, MW-03, MW-04, and MW-06 were sampled in accordance with approved work plan procedures. In addition, one (1) field blank, one (1) duplicate, and one (1) MS/MSD was collected. One (1) trip blank was collected for each day of sampling. Groundwater samples were analyzed for Target Compound List Volatile Organic Analytes (TCL VOAs) only.

2.9 Hydraulic Conductivity Testing

Instantaneous displacement tests or slug tests were conducted at four Magna Metals site monitoring wells on May 11 and 12, 1998. These tests were conducted in order to provide a general indication of relative hydraulic conductivity in the shallow unconsolidated aquifer.

Each slug test was conducted by dropping a sealed PVC cylinder (i.e., slug) into the well and measuring the resultant water level displacement. First, the static water level was measured with a hand-held instrument from the top of the casing prior to the test. The slug was then dropped into the well and completely submerged within a few seconds. Water levels were measured by hand-held instrument at regular intervals after displacement by the slug. Measurements were continued until approximately 90 percent recovery had occurred. After recovery from the first test was achieved, the slug was removed within a few seconds and recovering water levels were again monitored with a hand-held instrument.

Detailed analyses of the slug tests from the 1998 RI are presented in Appendix E.

2.10 Homeowner Survey

On August 8, 2003, officials at the Cortlandt Town Hall were contacted regarding potential private wells in the area. Based on discussions with Mickey Foster in the Town Water Department, it was concluded that all residents are currently on town water. Some town residents still have private wells, but these properties are either not in the area of the site. Private wells are upgradient of the former Magna Metals property by at least ¼ to ½ mile.

2.11 Monitoring Well Survey

The monitoring well locations were surveyed. Horizontal control was referenced to the New York State Plane coordinate system using the North American Datum of 1983 (NAD83). Vertical control was referenced to the North American Vertical Datum of 1988 (NAVD88). The survey was performed on March 29th and 30th, 2004.

2.12 Groundwater Level Measurements and Surface Water Survey

A synoptic round of water levels was collected on March 30, 2004 in coordination with a survey of five surface water elevation locations. Water levels were collected using a Solinst interface probe. The surface water elevations were also surveyed. Horizontal control was referenced to the New York State Plane coordinate system using the North American Datum of 1983 (NAD83). Vertical control was referenced to the North American Vertical Datum of 1988 (NAVD88). The results of the synoptic round of water level measurements are displayed in Table 2-2.

2.13 Building Interior Sampling

As a result of a proposed building demolition by Baker Properties, sampling beneath the building slab of the former Magna Metals building was planned. However, sampling was not performed because the building was not demolished prior to the field work. The structure is considered physically unsafe to enter. During remediation activities, the derelict building should be taken down and soils should be sampled for potential removal.

2.14 Investigation Derived Waste

Prior to the start of investigative work related to the supplemental RI, investigation derived waste (IDW) from the 1998 investigation was removed from the site (July 25, 2003). IDW resulting from work performed as part of the supplemental RI/FS work was stored on site in 55-gallon steel drums. Following the completion of supplemental RI investigative activities, a second IDW removal event occurred (May 3, 2004). No investigation waste remained at the conclusion of the 2005 field work. All investigation waste was removed from the site.

2.15 Soil Vapor Survey (2006)

Following submittal and NYSDEC review of the Draft Supplemental RI Report dated August 2004, the additional work was required to address the potential for soil gas at the site.

Eight (8) soil vapor and one (1) sub-slab vapor samples and one field duplicate were collected. Locations of the soil and sub-slab vapor (SV) locations are presented on Figure 2-4 and were agreed upon by representatives of NYSDEC and NYSDOH. Soil vapor and sub-slab vapor sampling was performed to confirm the absence of a vapor intrusion pathway.

Soil vapor and sub-slab vapor samples were analyzed at an ELAP-certified laboratory. Vapor samples were analyzed by United States Environmental Protection Agency (USEPA) Method TO-15 for volatile organic compounds with a reporting limit of 1 $\mu g/m^3$.

Soil vapor horizontal locations were surveyed using a Global Positioning System (GPS) unit with 3-foot accuracy. The sub-slab vapor implant location was measured from corners of the building in which the location is located. The relevant external corners of the building were located using a GPS unit.

2.16 AKRF Vapor Intrusion Assessment (2007)

In November 2006, the NYSDEC issued correspondence requiring the sampling of sub-slab soil vapor from the on-site office/warehouse building to the case of the Magna Metals building to confirm the presence or absence of soil vapor intrusion. NYSDEC's sampling requirement was in response to a TCE concentration of 59 micrograms per cubic meter in one soil vapor sample (SV-03) that was collected next to the office/warehouse building. A Soil Vapor Investigation Work Plan dated February 2007 (prepared by AKRF, Inc.) was approved by the NYSDEC in March 2007.

On March 16, 2007, the soil vapor sampling program was initiated with the completion of a presampling survey of the site building. A NYSDOH Indoor Air Quality Questionnaire and Building Inventory form for each occupant was used to document the detailed results of the survey.

On March 24, 2007, five interior soil-gas sampling points (SV-11 through SV-15), were installed within the Polymedco office, the Motion Laboratory, the Polymedco warehouse, and the International Purchasing Systems warehouse. Sample locations are presented in Figure 2-5.

On April 5, 2007, five sub-slab soil gas and six indoor air samples were collected using six-liter Summa canisters over an 8-hour sampling period. The samples were analyzed for VOCs by EPA Method TO-15.

Table 2-1
Leach/Septic Pit IDs, Sludge Thickness, and Construction Details
Magna Metals - Cortlandt, New York

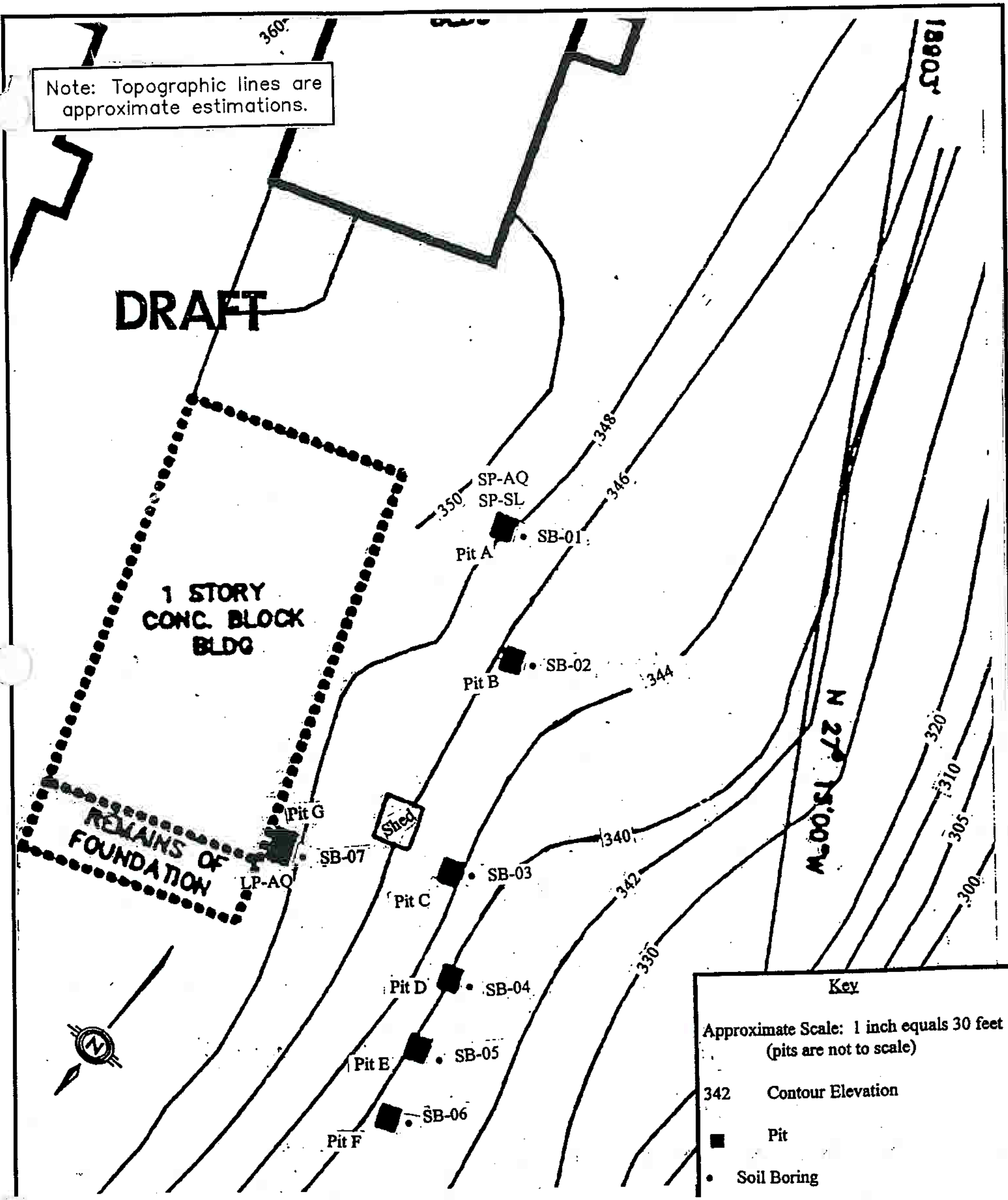
Current Pit ID	Previous Pit ID	Approximate Depth to Sludge (feet)*	Approximate Depth to Soil (feet)*	Approximate Sludge Thickness (feet)	Leach Pit Construction
ST-01	Pit A	6	-	NE	Rectangular shape with concrete walls and bottom
ST-02	Pit B	7	7.6	0.6	Cinderblock
LP-01	Pit G	NE	NE	NE	Rectangular shape, concrete walls with internal baffles
LP-02	Pit C	7	7.75	0.75	Cinderblock
LP-03	Pit D	7	8.3	1.3	Cinderblock
LP-04	Pit E	-	-	-	Cinderblock
LP-05	Pit F	7	8	1.0	Cinderblock
LP-06	**	7	7.3	0.3	Pre-fabricated
LP-06A	**	7	8	1.0	Cinderblock
LP-07	**	7	7.1	0.1	Pre-fabricated
LP-08	**	7	7.02	0.02	Pre-fabricated
LP-09	**	7	NE	<0.02	Pre-fabricated
LP-0A	**	7	NE	<0.02	Pre-fabricated

* Depths measured in feet below pit opening
** Leach pit discovered during 2004 field effort.
- Not able to measure
NE - Not estimated
Cinderblock - Cylindrical shape with concrete cinderblock construction
Pre-fabricated - Cylindrical, pre-fabricated concrete construction with 1" diameter perforations along sidewalls
All pits except ST-01and LP-01 are approximately 6' in diameter.
LP-04 is filled with debris, depth could not be measured

Table 2-2
Groundwater and Surface Water Elevations
March 30, 2004
Magna Metals - Cortlandt, New York

Location	Northing (feet)	Easting (feet)	Measuring Point Elevation (feet msl)	Depth to Water (feet)	Water Elevation (feet msl)
MW-01	889547.12	665389.57	367.94	6.85	361.09
MW-02	889760.21	665127.51	346.57	14.81	331.76
MW-03	889806.63	665090.97	341.92	16.67	325.25
MW-04D	889832.07	665073.80	339.61	14.9	324.71
MW-04	889840.26	665070.73	338.03	13.47	324.56
MW-05	890191.50	665491.01	343.40	11.71	331.69
MW-06	889901.83	665025.92	336.97	16.14	320.83
MW-07	889316.93	664899.66	334.73	8.48	326.25
MW-08	889301.20	664474.00	317.54	6.48	311.06
SWEL-1	889844.39	664863.44	309.86	0.00	309.86
SWEL-2	889797.07	664799.56	309.83	0.00	309.83
SWEL-3	890262.07	664686.03	309.97	0.00	309.97
SWEL-4	890099.19	664725.83	309.93	0.00	309.93
SWEL-5	889492.49	665113.99	316.31	0.00	316.31

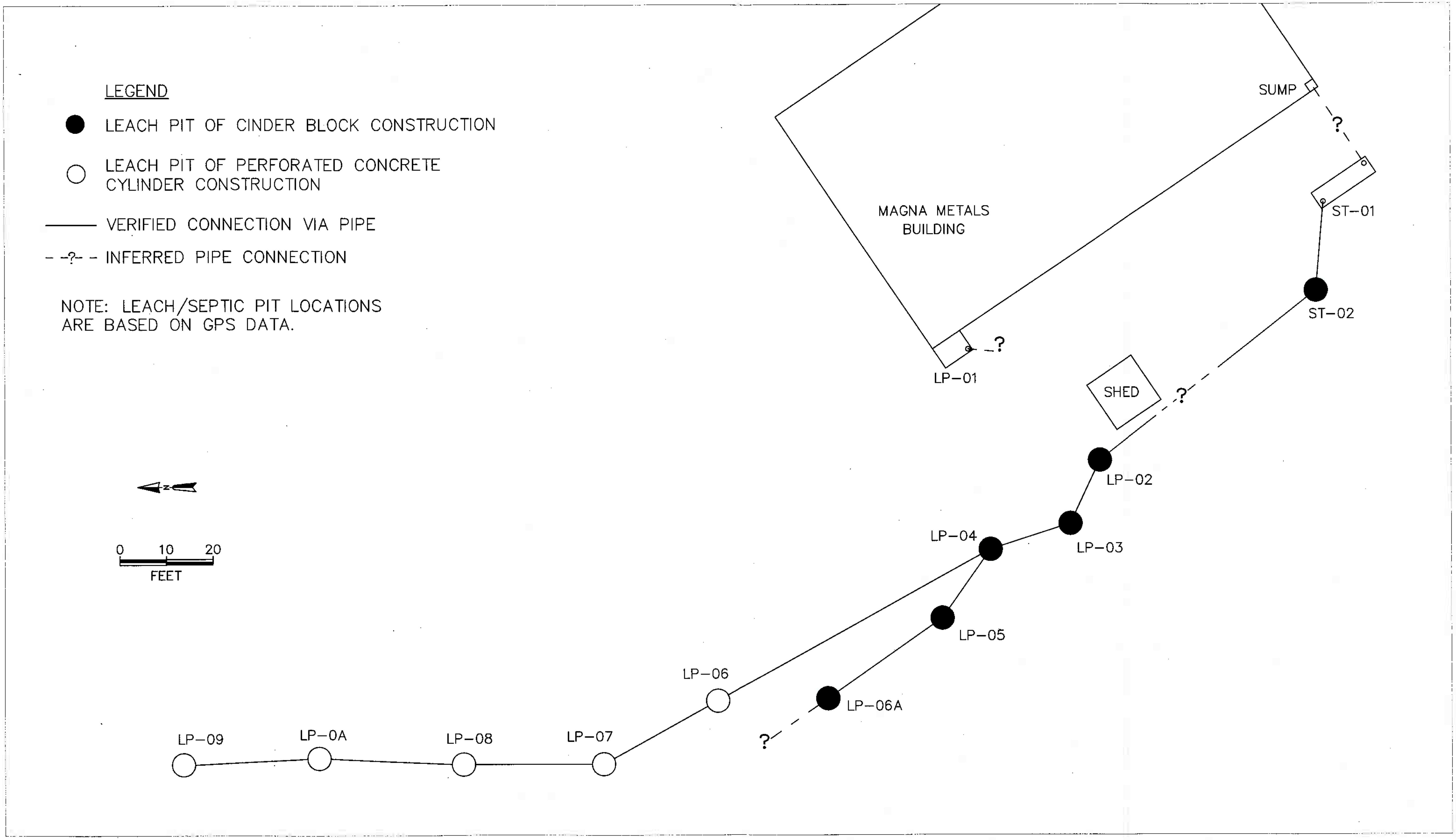
msl - Mean Sea Level
Horizontal Datum North American Datum of 1983 (NAD83 New York State Plane Coordinates Zone 3101)
Vertical Datum is North American Vertical Datum of 1988 (NAVD88)



TETRA TECH EC, INC.

TITLE:	DWN: LMB	DES.:	PROJECT NO.: 106–1172
Leach Pit Location Map – 1998 RI Summary Magna Metals Cortlandt, New York	CHKD:	APPD:	FIGURE NO.: 2–1
	DATE: 08/22/07	REV.: 0	

BCLP04640



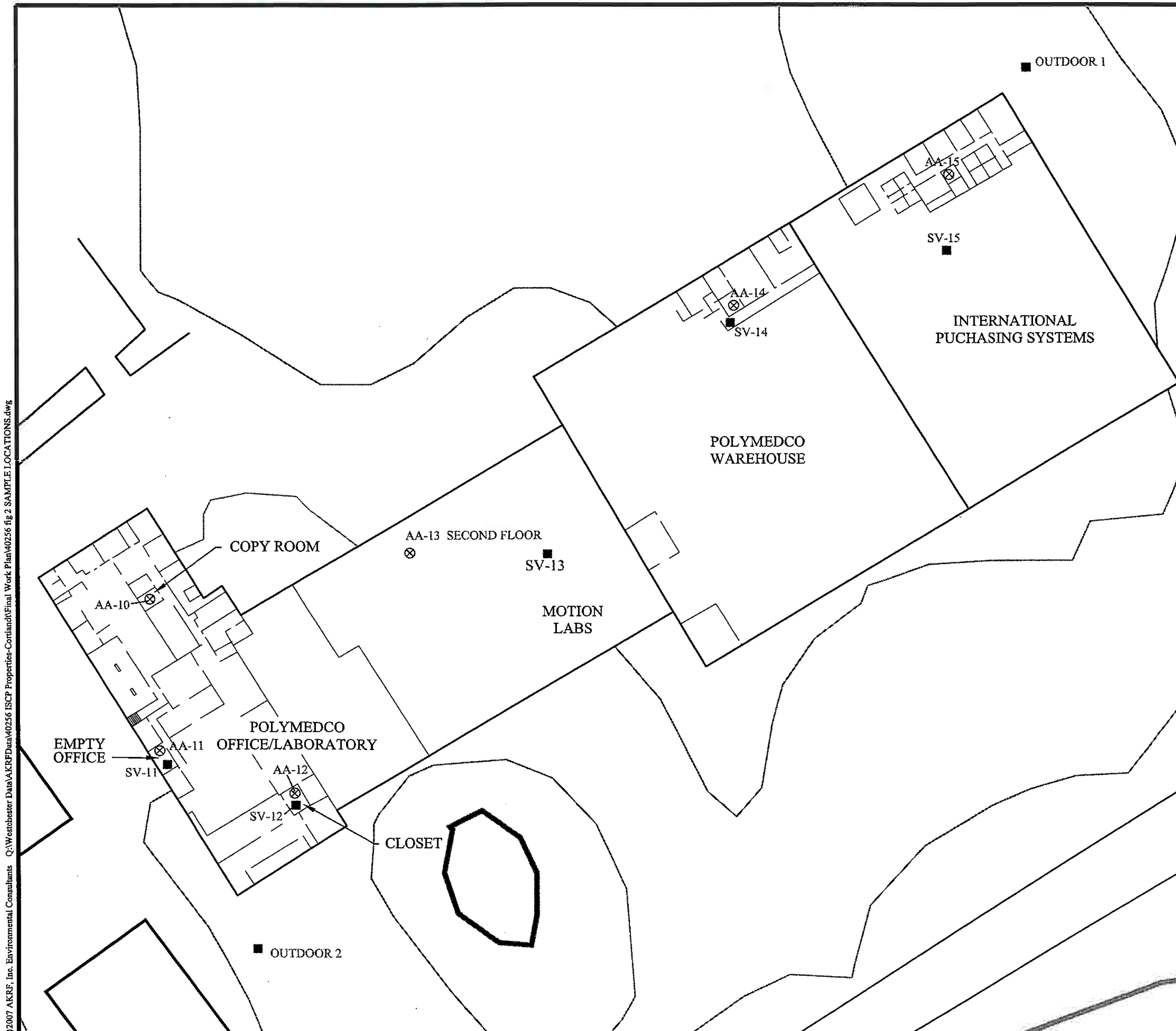
TETRA TECH EC, INC

TITLE: Leach/Septic Pit Location Map – 2004 Supplemental RI
Magna Metals
Cortlandt, New York

DWN.: CTS	DATE: 08/21/07	PROJECT NO.: 106-1172
CHKD:	REV.: 0	
DES.: DPC	APPD:	FIGURE NO.: 2-3

N:GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 2-3 082107.DWG

BCLP04641



SOURCES:
1. BASE MAP PROVIDED BY TETRA TECH EC, INC. JUNE 2006.

2. CONTOUR LINES BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

3. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

LEGEND:

■ SV-14	SUBSLAB VAPOR SAMPLING LOCATION
⊗	INDOOR AIR SAMPLING LOCATIONS
—— 320	CONTOUR LINE (20 FT INTERVAL)

NOTES:
1. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

0' 30' 60' 120'
SCALE IN FEET

N

AKRF
Environmental Consultants
34 South Broadway, White Plains, N.Y. 10601

MAGMA METALS
CORTLANDT, NEW YORK

SAMPLING LOCATIONS

DATE 05.25.07

PROJECT NO. 40256

SCALE 1"=60'

FIGURE 2-5